FIG. 1

MAGNITUDE f_i

L POSTCURSORS

DISCRETE TIME

K POSTCURSORS

FIG. 2

a_n → CHANNEL 210 → ⊕ → z_n → SEQUENCE ESTIMATOR 220 → a_n'

w_n

200

FIG. 3

$\rho_n = 1$

$\rho_n = -1$

$a_n = 1$

$a_n = 1$

$a_n = -1$

$a_n = -1$

n $n+1$

FIG. 4

z_n → | BMU (410) | → 415 → | ACSU (420) | → 425 → | SMU (430) | → a_n'

FIG. 5

420

$\Gamma_n(\rho_n=1)$

510

520

$\lambda_n(z_n, a_n=1, \rho_n=1) \rightarrow$

$\lambda_n(z_n, a_n=1, \rho_n=-1) \rightarrow$

530

$\rightarrow d_n(\rho_n=1)$

$\lambda_n(z_n, a_n=-1, \rho_n=1) \rightarrow$

$\lambda_n(z_n, a_n=-1, \rho_n=-1) \rightarrow$

$\rightarrow d_n(\rho_n=-1)$

$\Gamma_n(\rho_n=-1)$

FIG. 6

COMPLEXITY AND CRITICAL PATH ANALYSIS TABLE -- 600

620

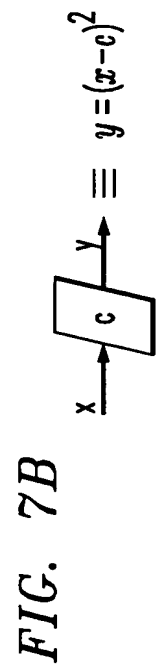|	MLSE	RSSE
COMPLEXITY		
NO. OF STATES:	2^L	2^K
NO. OF BMs	2^{L+1}	2^{K+1}
ADDs IN DFU:	——	$S \times L$
CRITICAL PATH	2 ADDs 2-to-1 MUX	$L - K + 3$ ADDs 2-to-1 MUX LUT SHIFT

FIG. 7A

$$y = (x-c)^2$$

FIG. 7B

FIG. 8

$d_n(\rho'_n=1)$ $\hat{a}_{n-3}(\rho_n=1)$ $\hat{a}_{n-3}(\rho'_n=-1)$ $d_n(\rho'_n=-1)$

SMU

ACSU

ACSU
830

825

BMU

$-f_1$ f_1 $-f_1$ f_1
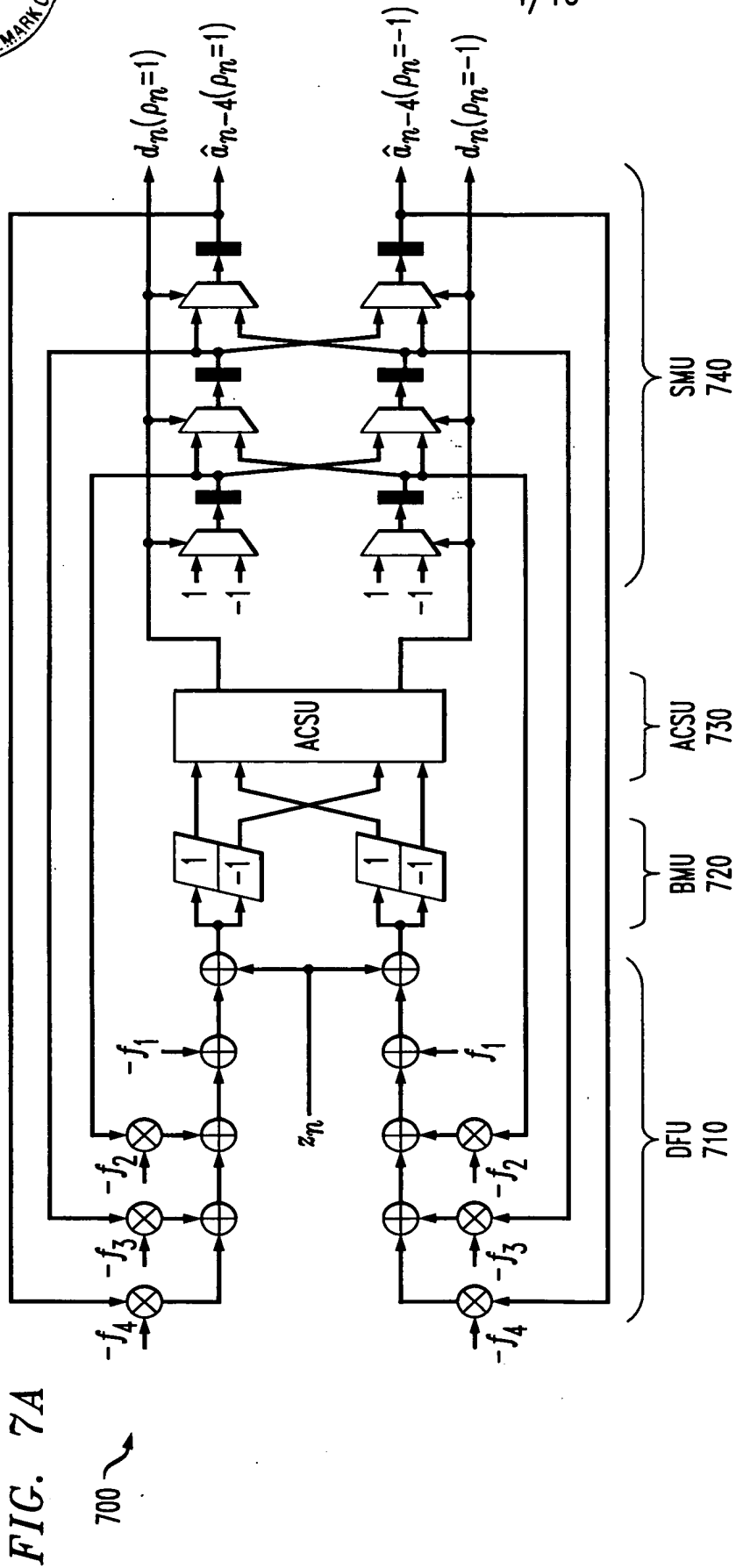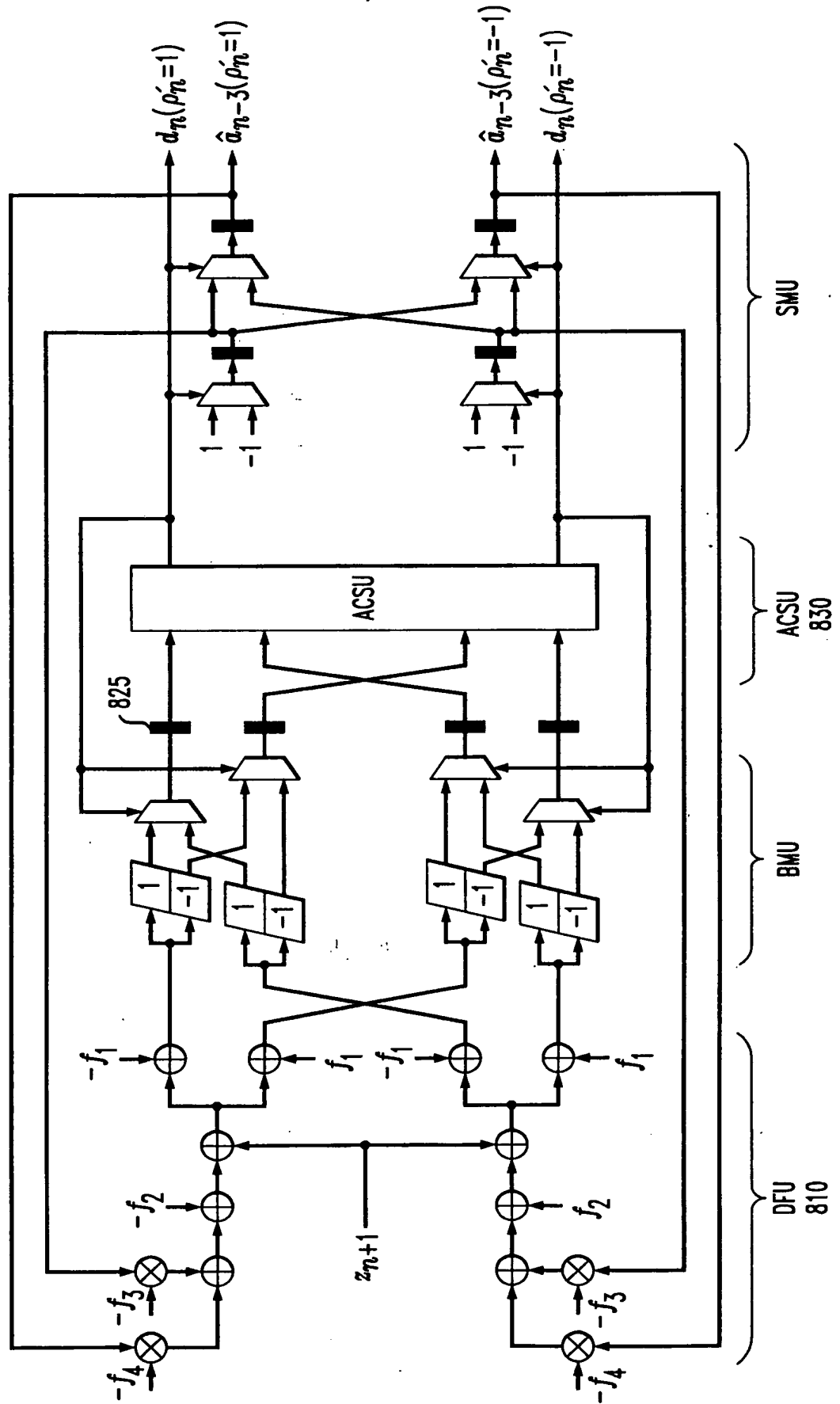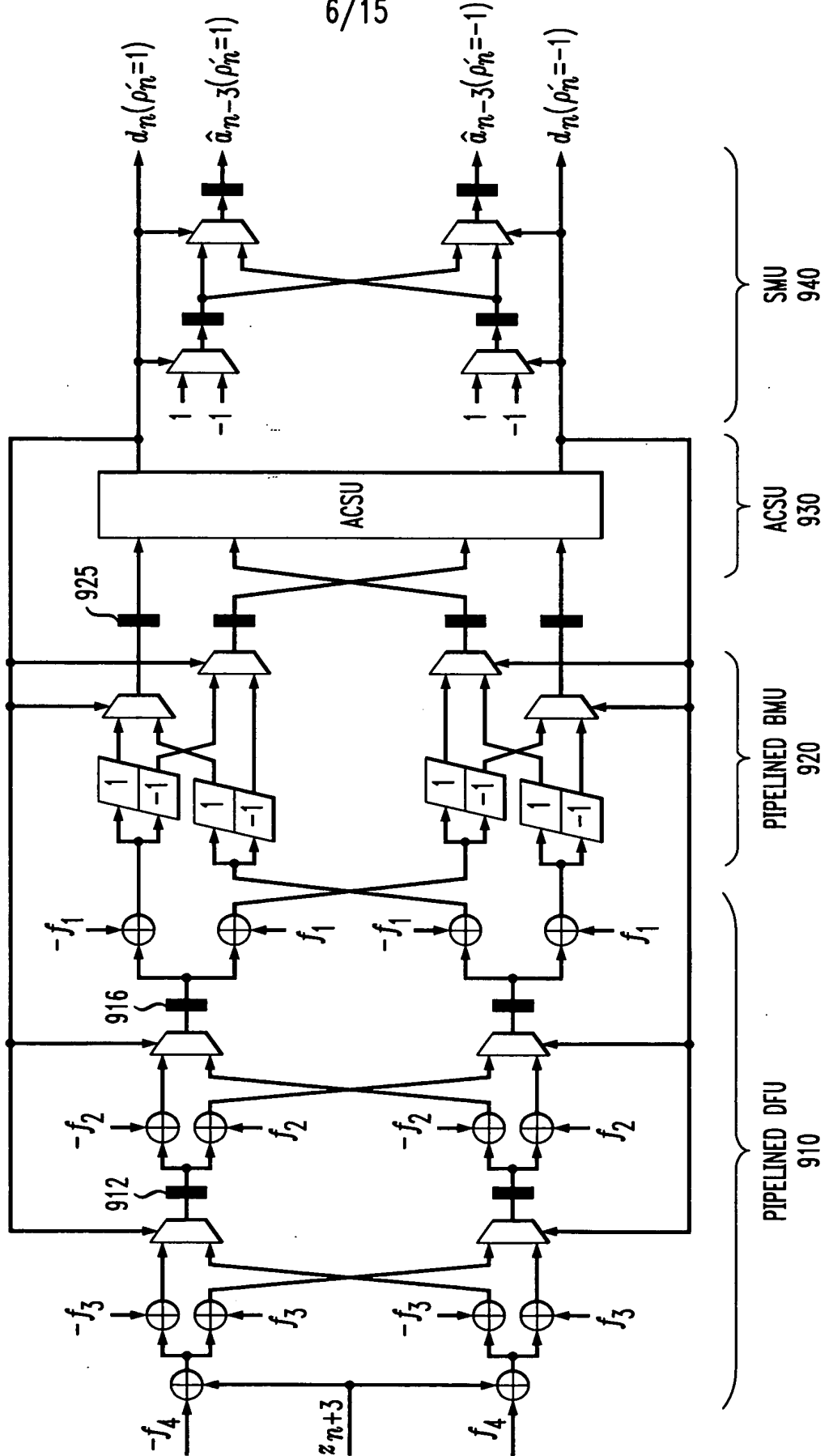
z_{n+1}

$-f_2$ f_2

$-f_3$ $-f_3$

$-f_4$ $-f_4$

DFU
810

FIG. 9

FIG. 10

COMPLEXITY AND CRITICAL PATH ANALYSIS TABLE OF PIPELINED RSSE -- 1000

	PIPELINED RSSE
COMPLEXITY	
NO. OF BMs:	2^{K+2}
ADDs IN DFU:	$Sx(L-M+2M) = Sx(L+M)$
CRITICAL PATH $(M=L-K)$	2 ADDs 2-to-1 MUX

FIG. 11

FIG. 12

FIG. 13

FIG. 14

8 ACS DECISIONS: $\{d_n(\rho_{n+1})\}$

DFU 1410

LA-DFU 1412

$8\times4\times5=160$ ISI ESTIMATES

ISI-MUXU 1416

$8\times4=32$ ISI ESTIMATES 1418

1D-BMU 1420

1D-LA-BMU 1424

$8\times4\times5\times2=320$ 1D BMs

1D-BM-MUXU 1428

$8\times4\times2=6$ 1D BMs 1429

$z_{n+1,4}$
$z_{n+1,3}$
$z_{n+1,2}$
$z_{n+1,1}$

4D-BMU 1430

$8\times4=32$ 4D BMs

ACSU 1440

SYMBOL DECISIONS

SMU 1450

DECODED BITS

$8\times4=32$ SURVIVOR SYMBOLS: $\{\hat{a}_{n,j}(\rho_{n+1})\}$

$8\times4\times12=384$ SURVIVOR SYMBOLS: $\{\hat{a}_{n-1,j}(\rho_n),\hat{a}_{n-2,j}(\rho_n),...,\hat{a}_{n-12,j}(\rho_n)\}$

FIG. 15

FIG. 16

FIG. 17

$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},A,\rho_n,-2)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},B,\rho_n,-2)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},A,\rho_n,-1)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},B,\rho_n,-1)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},A,\rho_n,0)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},B,\rho_n,0)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},A,\rho_n,1)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},B,\rho_n,1)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},A,\rho_n,2)$$
$$\tilde{\lambda}_{n+1,j}(z_{n+1,j},B,\rho_n,2)$$

1424

$v_{n+1,j}(\rho_n)$

$z_{n+1,j}$

$2f_{1,j}$
$f_{1,j}$
$-f_{1,j}$
$-2f_{1,j}$

FIG. 18

FIG. 5

420

$\Gamma_n(\rho_n=1)$

520

530

$d_n(\rho_n=1)$

510

$\lambda_n(z_n, a_n=1, \rho_n=1)$

$\lambda_n(z_n, a_n=1, \rho_n=-1)$

$\lambda_n(z_n, a_n=-1, \rho_n=1)$

$\lambda_n(z_n, a_n=-1, \rho_n=-1)$

$d_n(\rho_n=-1)$

$\Gamma_n(\rho_n=-1)$

FIG. 6

COMPLEXITY AND CRITICAL PATH ANALYSIS TABLE -- 600

620

	MLSE	RSSE
COMPLEXITY		
NO. OF STATES:	2^L	2^K
NO. OF BMs	2^{L+1}	2^{K+1}
ADDs IN DFU:	——	$S \times L$
CRITICAL PATH	2 ADDs 2-to-1 MUX	$L-K+3$ ADDs 2-to-1 MUX LUT SHIFT

FIG. 8

FIG. 11

FIG. 12